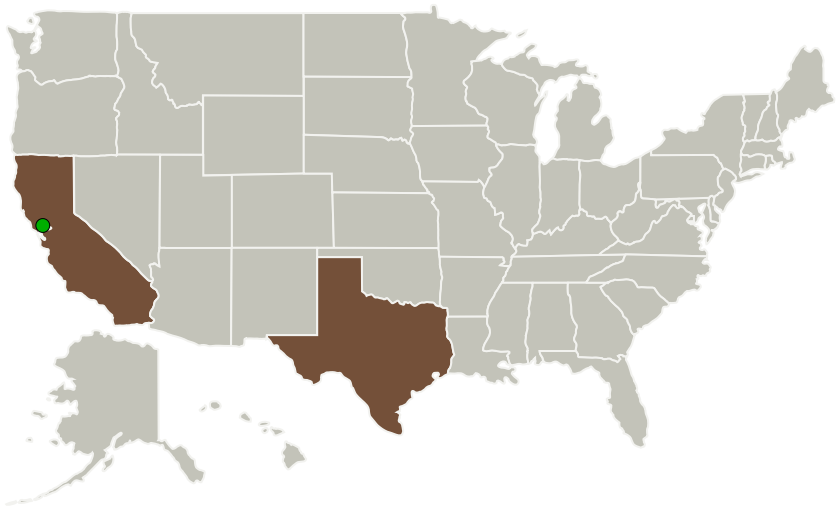
Augmented Reality, Phase I

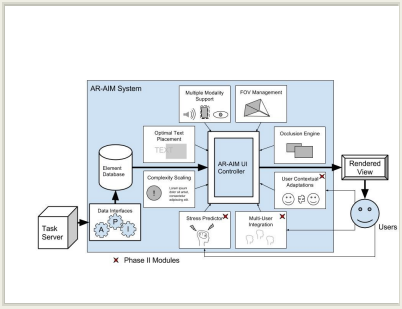
Completed Technology Project (2017 - 2017)

Project Introduction

Augmented Reality systems come with many benefits derived by co-locating information with a user's environment through the use of one or more output modalities such as visual, auditory and tactile. In the case of future human spaceflight programs involving deep space missions, the ground operations infrastructure currently utilized for support of LEO missions will be less accessible or unavailable. This will place far higher emphasis on the importance of automated and intelligent tools for tasking, advising, and monitoring autonomous crew activity. Augmented Reality systems will play a key role in achieving crew autonomy. With this fusion of real and virtual perception, however, comes challenges to ensure that the information is presented in a way that the user can effective consume it meet the goals of the situation. The proposed innovation is a configurable and extensible Augmented Reality Adaptable Information Manager (AR-AIM) that provides an infrastructure for integration of disparate sensor inputs, task definitions, consideration factors, prioritization algorithms, and output modalities to achieve adaptive augmented reality. Specifically, it will include a diverse combination of capabilities needed to make user interfaces that dynamically change to increase user precision and reduce stress on the user caused by the system. By being implemented as a reusable library, the AR-AIM controller suite can be leveraged across many systems, use cases, and domains. Features will include: - FOV Management - Occlusion Engine - Optimal Text Placement - Complexity Scaling - Multiple Modality Support - Data Interfaces - User Contextual Adaptations - Stress predictor - Multi-user Integration

Primary U.S. Work Locations and Key Partners





Augmented Reality, Phase I Briefing Chart Image

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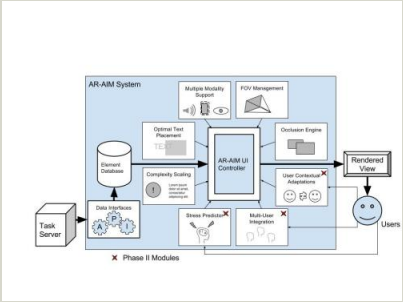
Organizations Performing Work	Role	Type	Location
METECS	Lead Organization	Industry	Houston, Texas
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Texas

Images



Briefing Chart Image
Augmented Reality, Phase I
Briefing Chart Image
(https://techport.nasa.gov/image/126820)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
METECS

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

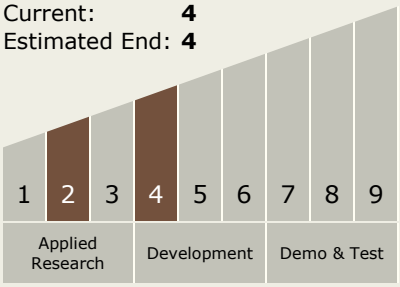
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jesse Berger

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.6 Human Systems Integration
    - TX06.6.1 Human Factors Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System